

CLAIMS

What is claimed is:

1 1. A switching device comprising
2 a plurality of ports to transmit data to and receive data from external sources,
3 wherein the ports operate at asymmetric speeds;

4 a switching matrix to provide selective connectivity between the ports; and
5 a plurality of channels to connect the ports to the switching matrix, wherein
6 number of channels associated with each port is determined by speed of the port.

1 2. The device of claim 1, further comprising a scheduler to select
2 connectivity between the ports and to configure the switching matrix accordingly.

1 3. The device of claim 2, wherein said scheduler configures said switching
2 matrix to connect the channels associated with an incoming port to the channels associate
3 with a corresponding outgoing port.

1 4. The device of claim 2, wherein said scheduler connects all the channels
2 associated with a first port to a subset of the channels associated with a second port, if the
3 first port is operating at a lower speed than the second port.

1 5. The device of claim 1, wherein data is transferred between an incoming
2 port and a corresponding outgoing port at speed of the slower of the incoming port and
3 the corresponding outgoing port.

1 6. The device of claim 5, wherein number of channels connected together to
2 transfer data between the incoming port and the corresponding outgoing port is number

3 of channels associated with the slower of the incoming port and the corresponding
4 outgoing port.

1 7. The device of claim 2, wherein
2 at least some subset of the plurality of ports send requests to said scheduler; and
3 said scheduler performs attribution of the requests to select connectivity.

1 8. The device of claim 2, wherein said scheduler configures said switching
2 matrix to connect inactive incoming ports to inactive outgoing ports.

1 9. The device of claim 2, wherein said scheduler configures said switching
2 matrix to connect inactive incoming channels to inactive outgoing channels.

1 10. The device of claim 2, wherein said scheduler determines logical port
2 connections and translates them to physical port locations.

1 11. The device of claim 2, wherein said scheduler includes
2 a request processor to process requests for permission to transmit data received
3 from at least some subset of the sources;
4 a schedule engine to determine requests to be accepted;
5 a grant generator to generate grants for the sources that had requests accepted; and
6 a configurator to instruct switching matrix to connect channels associated with a
7 source to channels associated with a destination based on the grants.

1 12. A method comprising:

2 selecting connection paths between a plurality of ports, wherein the ports operate
3 at asymmetric speeds and are connected to a switching matrix via a plurality of channels,
4 number of channels associated with each port is determined by speed of the port; and

5 configuring the switch matrix, in response to said selecting, to connect the
6 channels associated with an incoming port to the channels associate with a corresponding
7 outgoing port.

1 13. The method of claim 12, further comprising receiving a plurality of
2 requests for permission to transmit data from an incoming port to an outgoing port,
3 wherein said selecting is based at least in part on the plurality of requests received.

1 14. The method of claim 13, further comprising performing attribution of the
2 requests.

1 15. The method of claim 14, further comprising granting permission to
2 transmit data from incoming ports to corresponding outgoing ports.

1 16. The method of claim 12, further comprising transmitting data from
2 incoming ports to corresponding outgoing ports via the switch matrix.

1 17. The method of claim 16, wherein said transmitting includes transmitting
2 the data from an incoming port to a corresponding outgoing port at speed of the slower of
3 the incoming port and the corresponding outgoing port

1 18. The method of claim 12, wherein said configuring includes connecting all
2 the channels associated with a first port to a subset of the channels associated with a
3 second port, if the first port is operating at a lower speed than the second port.

1 19. The method of claim 12, wherein said configuring includes connecting
2 inactive incoming ports to inactive outgoing ports.

1 20. The method of claim 12, wherein said configuring includes connecting
2 inactive incoming channels to inactive outgoing channels.

1 21. The method of claim 12, wherein said selecting includes selecting logical
2 input port to output port connections and translating the logical ports to physical ports.

1 22. A store and forward device comprising
2 a plurality of Ethernet cards to receive data from and transmit data to external
3 sources, wherein the plurality of Ethernet cards operate at asymmetric speeds;
4 a switching matrix to provide selective connectivity between the Ethernet cards;
5 a backplane consisting of a plurality of channels to connect the plurality of
6 Ethernet cards to the switching matrix, wherein number of channels associated with each
7 Ethernet card is based on speed of the Ethernet card; and
8 a scheduler to select connectivity between Ethernet cards and to configure the
9 switching matrix accordingly.

1 23. The device of claim 22, wherein said scheduler configures said switching
2 matrix to connect the channels associated with an incoming Ethernet card to the channels
3 associate with a corresponding outgoing Ethernet card.

1 24. The device of claim 22, wherein said scheduler connects all the channels
2 associated with a first Ethernet card to a subset of the channels associated with a second

3 Ethernet card, if the first Ethernet card is operating at a lower speed than the second
4 Ethernet card.

1 25. The device of claim 22, wherein
2 at least some subset of the plurality of Ethernet card send requests to said
3 scheduler; and
4 said scheduler performs attribution of the requests to select connectivity.

1 26. The device of claim 22, wherein said scheduler configures said switching
2 matrix to connect inactive incoming Ethernet card to inactive outgoing Ethernet card.

1 27. The device of claim 22, wherein said scheduler configures said switching
2 matrix to connect inactive incoming channels to inactive outgoing channels.

1 28. The device of claim 22, wherein said scheduler determines logical
2 Ethernet card connections and translates them to physical Ethernet card connections.

1 29. The device of claim 22, wherein said scheduler includes
2 a request processor to process requests for permission to transmit data received
3 from at least some subset of the interface modules;
4 a schedule engine to determine requests to be accepted;
5 a grant generator to generate grants for the interface modules that had requests
6 accepted; and
7 a configurator to instruct switching matrix to connect channels associated with an
8 ingress interface module to channels associated with an egress interface module based on
9 the grants.

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30. The device of claim 22, wherein the backplane is electrical.